

## Research Skills (C004227)

**Course size** *(nominal values; actual values may depend on programme)*

**Credits 3.0**                      **Study time 90 h**

**Course offerings and teaching methods in academic year 2024-2025**

A (Year)	Dutch, English	Gent	group work	
			lecture	15.0h
			independent work	

**Lecturers in academic year 2024-2025**

De Rijcke, Sven	WE05	lecturer-in-charge
Boone, Matthieu	WE05	co-lecturer
Detavernier, Christophe	WE04	co-lecturer

**Offered in the following programmes in 2024-2025**

	<b>crdts</b>	<b>offering</b>
<a href="#">Bachelor of Science in Physics and Astronomy</a>	3	A

**Teaching languages**

English, Dutch

**Keywords**

literature research; scientific writing; research skills.

**Position of the course**

This course unit belongs to the learning pathway "Experimental physics and astronomy; data processing" in the Bachelor program Physics and Astronomy

In this course the student will obtain different research skills, which will also be needed during the bachelorproject and the master thesis, and later in any research environment (not limited to academic research).

The student will learn how they can search in an efficient way scientific and technical information, how to process and report the information. Furthermore, the student will learn to reflect critically on both the technical-scientific aspects as well as social (notably ethical) aspects of scientific research.

The course will allow the students to apply their acquired multidisciplinary knowlegde on a given research topic. The students will obtain insight in the organisation and how to perform a research question or project, will learn how they can work independently or in group to solve problems, to ask specific questions and to communicate in a clear way with the promotor and with their peers.

**Contents**

- 1 Scientific literature: basic aspects of peer review, types of scientific publications, sources of literature, databases, libraries. Literature studies.
- 2 Ethical aspects of scientific research. Research integrity. Principles of FAIR
- 3 Communication of scientific work and results. Structure of scientific papers. Data visualization and graphical abstracts
- 4 Valorization and IP
- 5 Perform a literature study on one of the selected topics
- 6 Conception of a research plan

**Initial competences**

Having successfully completed the courses "Experimenteren in de fysica en de sterrenkunde 1" and "Experimenteren in de fysica en de sterrenkunde 2". Good English proficiency

**Final competences**

- 1 The student is able to translate a research question into a relevant literature study.
- 2 Based on a literature study, the student is able to summarize the described knowledge and show a critical attitude towards the described results
- 3 The student is able to reference in a scientific way, and write in English using the appropriate jargon
- 4 The student is able to work and communicate as a team.
- 5 The student has basic knowledge of the ethical aspects of research as well as of valorization and IP

#### **Conditions for credit contract**

Access to this course unit via a credit contract is determined after successful competences assessment

#### **Conditions for exam contract**

This course unit cannot be taken via an exam contract

#### **Teaching methods**

Group work, Lecture, Independent work

#### **Extra information on the teaching methods**

During lectures by the lecturers and guest lecturers, general research skills will be taught, notably on the topics of scientific literature, research integrity, scientific writing and presentation skills.

In the section on scientific literature, peer review, available databases, search strategies, citing, referencing and reference software are discussed. Subsequently, the students individually or in small groups work out a literature study.

#### **Study material**

Type: Slides

Name: Slides

Indicative price: Free or paid by faculty

Optional: no

Language : Dutch

Number of Slides : 1

Oldest Usable Edition : 2023

Available on Ufora : Yes

Online Available : No

Available in the Library : No

Available through Student Association : No

#### **References**

Writing for Science Students, Jennifer Boyle, Scott Ramsay, Publisher: Red Globe Press, Pages: 224, Series: Macmillan Study Skills <https://www.macmillanihe.com/page/detail/Writing-for-Science-Students/?K=9781137571519>

#### **Course content-related study coaching**

#### **Assessment moments**

continuous assessment

#### **Examination methods in case of periodic assessment during the first examination period**

#### **Examination methods in case of periodic assessment during the second examination period**

#### **Examination methods in case of permanent assessment**

Participation, Assignment

#### **Possibilities of retake in case of permanent assessment**

examination during the second examination period is possible in modified form

#### **Calculation of the examination mark**